

Original Research Article

Perception of tuberculosis among diabetics attending health training centres of a medical college hospital, Kancheepuram district, Tamil Nadu

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ABSTRACT

Background: Diabetes mellitus, chronic non communicable disease triples the risk of developing tuberculosis by decreasing the immunity status. The prevalence of tuberculosis is higher in people with diabetes than in the general population, and diabetes is common co morbidity among people with tuberculosis. Health seeking behaviour of a patient depends up on their awareness of disease. The objective of this study was to determine the perception of tuberculosis among people with type 2 diabetes mellitus attending urban and rural health training centers.

Methods: A facility based, comparative cross-sectional study was conducted among diabetics attending urban and rural training centres of a medical college hospital, Kancheepuram district. Sample size was estimated as 140. A semi structured questionnaire was used to interview the participants. Data was analysed using SPSS software 16v.

Results: Among 140 participants, 70 were from rural setting and remaining of them from urban setting. The perception score was good among 31.4% of diabetics in urban and 8.6% among rural setting. The educational status, socio economic status and family history of tuberculosis were significantly associated with good perception score.

Conclusions: The perception score was better in urban diabetics compared with rural diabetes patients. Health education measures will improve the health seeking behaviour.

Keywords: Diabetes, Perception, Rural, Tuberculosis, Urban

INTRODUCTION

Tuberculosis is an active infectious disease caused by *Mycobacterium tuberculosis*. In 2017, there were an estimated 10.0 million new cases of tuberculosis, equivalent to 133 cases per 1,00,000 population worldwide.¹ As per the Global TB report 2017 the estimated incidence of TB in India was about 28,00,000 accounting for about a quarter of the world's TB cases.²

Diabetes mellitus, a chronic non communicable disease triples the risk of developing tuberculosis by decreasing immunity status. The prevalence of tuberculosis is higher

in people with diabetes than in the general population, and diabetes is a common co morbidity among people with tuberculosis.³ The systematic review of 13 observational studies in 2008 by Jeon et al reveals that there was an increased risk of tuberculosis in diabetic patients, and also there was a consistent evidence that hyperglycemia will affect host response to tuberculosis.⁴ A meta-analysis done on 2016 by Lee et al shows that diabetes was associated with latent Tuberculosis infection.⁵

Globally, 10% of tuberculosis cases are linked to diabetes. In India, diabetes accounts for 20% of sputum positive tuberculosis cases. Diabetes can worsen the

clinical course of tuberculosis, and tuberculosis can worsen glycemic control in people with diabetes. The diabetic patients with tuberculosis have a higher risk of death during treatment and relapse after treatment.⁶ Tuberculosis must be diagnosed early in people with diabetes. A person can recognize the symptoms, if the person has adequate knowledge about the disease. So, it is essential to educate diabetic patients regarding Tuberculosis to improve their health seeking behaviour. The objective of this study was to determine the perception of tuberculosis among diabetic patients attending urban and rural health training centres of a medical college hospital, Kancheepuram district.

METHODS

A facility based, comparative, cross sectional study was conducted among diabetics attending rural health and training centre, Pulipakkam and urban health and training centre, Anna Nagar a field practice area of Karpaga Vinayaga Institute of Medical Sciences and Research Centre, Kancheepuram district, Tamil Nadu from March to August, 2019. The population included were type 2 diabetes patients who were willing to participate in this study.

The sample size was estimated based on the prevalence of average knowledge by Hossain et al study which showed that 66% of diabetic patients had average knowledge of tuberculosis.⁷ The sample size was calculated to be 140 by using the formula $4pq/d^2$ with 5% level of significance. A pre tested semi structured questionnaire was used to interview the participants about perception of tuberculosis in the diabetic outpatient department of both health and training centres. Informed written consent was obtained from the participants. The questionnaire consists of questions related to socio demographic profile of participants and perception of tuberculosis.

The perception score was assessed by correct and incorrect responses of every question and scored 0 and 1 respectively. The questions used to assess were heard of Tuberculosis, know the cause of tuberculosis (by bacteria/germ), know mode of transmission (droplet spread), know any of the symptoms (cough with expectoration, breathlessness, hemoptysis, loss of appetite, loss of weight, night sweats, fever), diabetes can acquire tuberculosis, tuberculosis can be curable, treatment provided free of cost, duration of treatment, know the financial benefits offered to Tuberculosis patients, mode of prevention, tuberculosis patients not to be stigmatized and tuberculosis can lead to death. The Perception score was categorized as good score (> 10), average score (4-10) and poor score (< 4) for the total score of 12.

Data was entered in Microsoft Excel 2013 and analysed by Statistical Package of Social Sciences (SPSS) software version 16. Continuous variables were expressed as mean and standard deviation. Categorical variables were

expressed as percentages. The association between perception score and socio - demographic determinants was assessed by Chi - square test and Fisher Exact test. A P value of less than 0.05 considered as statistically significant. The ethical clearance was obtained from Institutional Ethics Committee, Karpaga Vinayaga Institute of Medical Sciences and Research Centre, Madhuranthagam.

RESULTS

This study was conducted to assess the perception of Tuberculosis among diabetics attending urban and rural health centres. Among 140 participants, 70 were from urban and remaining from rural setting. The mean age and standard deviation (SD) of participants in years was 54.31 ± 9.759 , and 53.84 ± 8.514 in urban and rural settings respectively. Table 1 shows the socio-demographic profile of participants in urban and rural settings.

One fourth of study population included were males in this study. The literates comprised of 99% among urban and 80% among rural participants. In urban, most of the people were involved in skilled and semiskilled occupation and in rural, most of them were involved in semiskilled occupation. Majority were Hindus in both settings. In urban, there was an equal distribution of type of family, but in rural, majority belonged to joint family. The mixed distribution of socio - economic status was seen in urban where as in rural, majority belonged to lower socio - economic class (lower middle and lower) as per Modified BG Prasad socio - economic status classification 2019 (Table 1).

The duration of diabetes was more than five years among 55.7% of urban participants and 40% of rural participants. The positive family history was seen among 7.1% of urban and 5.7% of rural participants.

Table 2 shows the perception of tuberculosis. The association was found to be statistically significant among urban participants compared with rural participants for perception of tuberculosis except the knowledge of financial benefits offered for tuberculosis patients. ($P < 0.05$) (Table 2).

The perception score was classified according to the correct and incorrect responses given by the participants by interview method. The score of perception was categorized into good (> 10), average (4-10) and poor (< 4) for the total score of 12. Figure 1 shows the perception score among diabetes patients. The score was good among 31.4% of diabetes patients in urban and 8.6% in rural setting. The diabetes patients of 45.7% in urban and 24.3% in rural had average score. The score was poor among 22.9% of urban and 67.1% of rural diabetes patients. The overall perception score was average in urban diabetes patients and poor in rural diabetes patients (Figure 1).

Table 1: Baseline characteristics of study participants (n=140).

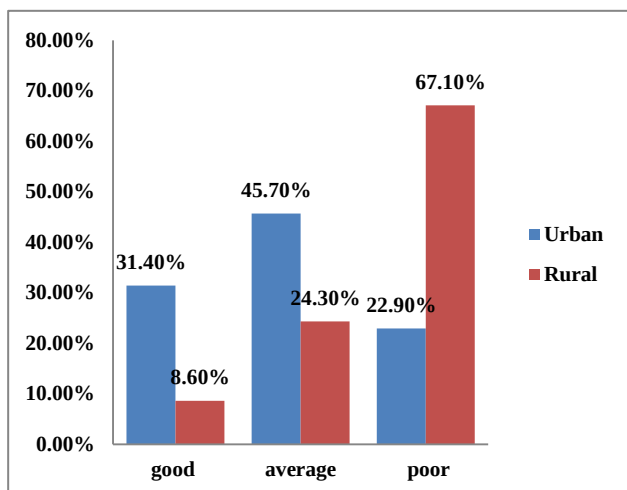
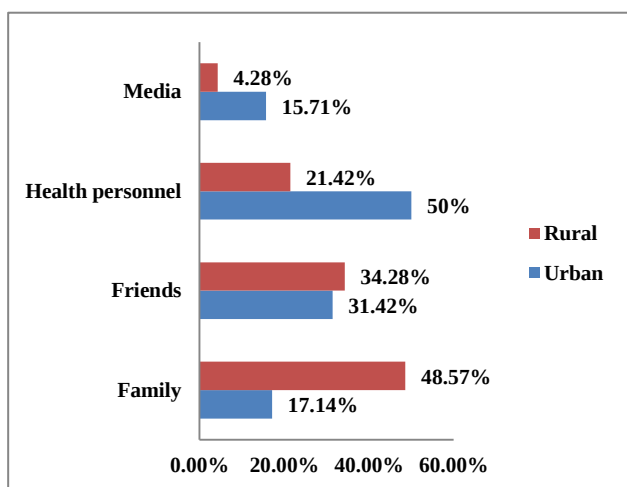
Variables		Urban (n=70)	Rural (n=70)
		N (%)	N (%)
Age (mean±SD)		54.31±9.75	53.84±8.51
Gender	Male	27 (38.6)	20 (28.6)
	Female	43 (61.4)	50 (71.4)
Education	Illiterate	1 (1.4)	14 (20)
	Primary	10 (14.3)	29 (41.4)
	Middle	17 (24.3)	15 (21.4)
	High	18 (25.7)	7 (10)
	Higher secondary	15 (21.4)	4 (5.7)
	Graduates	9 (12.9)	1 (1.4)
	Semi professional	10 (14.3)	-
Occupation	Clerical, shop owner	5 (7.1)	4 (5.7)
	Skilled	20 (28.6)	19 (27.1)
	Semiskilled	27 (38.6)	37 (52.9)
	Unskilled	2 (2.9)	2 (2.9)
	Retired	6 (8.6)	8 (11.4)
	Hindu	56 (80)	68 (97.1)
Religion	Muslim	4 (5.7)	1 (1.4)
	Christian	10 (14.3)	1 (1.4)
	Nuclear	36 (51.4)	23 (32.9)
Type of family	Joint	34 (48.6)	47 (67.1)
	Upper	9 (12.9)	0
SES	Upper middle	29 (41.4)	1 (1.4)
	Middle	15 (21.4)	12 (17.1)
	Lower middle	13 (18.6)	42 (60)
	Lower	4 (5.7)	15 (21.4)
	≤ 5 years	31 (44.3)	42 (60)
Duration of diabetes	> 5 years	39 (55.7)	28 (40)
	Yes	4 (5.7)	5 (7.1)
Family history of tuberculosis	No	66 (94.3)	65 (92.9)

Table 2: Perception of tuberculosis among study participants.

Perception	Urban	Rural	χ ² value	P value
	N (%)	N (%)		
Heard about tuberculosis	63 (90)	27 (38.5)	40.744	0.0001
Know the causes of tuberculosis	40 (57.1)	10 (14.3)	26.164	0.0001
Know how tuberculosis is transmitted	52 (74.3)	17 (24.3)	33.035	0.0001
Know any of the symptom of tuberculosis	62 (88.6)	26 (37.1)	66.727	0.0001
Diabetics can acquire tuberculosis	24 (34.3)	6 (8.6)	12.906	0.01
Tuberculosis is curable	51 (72.9)	14 (20)	41.694	0.0001
Treatment provided free of cost	25 (35.7)	9 (12.9)	20.206	0.0001
Know the duration of treatment for tuberculosis	25 (35.7)	7 (10)	11.707	0.0001
Know about any financial benefits offered for tuberculosis patients?	6 (8.6)	5 (7.1)	0.098	1.0
Tuberculosis patients do not stigmatize	49 (70)	9 (12.9)	33.799	0.0001
Tuberculosis can be prevented in diabetic people	28 (40)	7 (10)	23.743	0.0001
Tuberculosis can lead to death	20 (28.6)	14 (20)	51.01	0.0001

Table 3: Association of perception score among study participants (n=140).

Score	Urban	Rural	P value
	N (%)	N (%)	
Good (>10)	22 (31.4)	6 (8.6)	0.0001
Average (4-10)	32 (45.7)	17 (24.3)	
Poor (<4)	16 (22.9)	47 (67.1)	


Figure 1: Perception score among study participants.

Figure 2: Source of knowledge among study participants.

The perception score among participants in urban setting was found to be significantly associated with education ($p=0.0001$), socio - economic status ($p=0.004$) and family history of tuberculosis ($p=0.007$). There was no association found with gender ($p=0.508$), religion ($p=0.266$), duration of diabetes ($p=0.296$) and type of family ($p=0.267$). The perception score in rural setting was also found to have significant association with education ($p=0.006$), socio - economic status ($p=0.0001$) and family history of tuberculosis ($p=0.0001$). There was no association found with gender ($p=0.153$), religion ($p=0.211$), duration of diabetes ($p=0.856$) and type of

family ($p=0.266$). The perception score was better among urban diabetes patients compared with rural diabetes patients. The association was found to be significant ($p<0.05$) (Table 3).

The major source of knowledge was family, friends, health personnel and media. Figure 2 shows the source of knowledge acquired by the participants. Most of the urban diabetics had received information from the health personnel and by friends and rural diabetics from their family and by friends (Figure 2).

DISCUSSION

This study shows that the overall perception score was average in urban diabetes patients, and poor in rural diabetes patients. In a study, by Hossain et al conducted at Bangladesh with similar burden as India, showed that the diabetics from general hospital had 66% and 15% of average and good perception scores respectively.⁷ This was marginally better than our study. The mean age of participants of this study was 51 ± 12 years which was similar as our study. But this variation may be due to characteristics of participants adhering to general hospital and health training centres.

The study among urban and rural population conducted at Maharashtra by Mahakalkar et al showed that knowledge and awareness about tuberculosis is not up to the mark with rural population which was similar to our study.⁸ The Shedole et al study showed that the knowledge of tuberculosis was better among urban college students than rural students which was also similar to our study.⁹

Archana et al, study reported that urban slums from Karnataka had good knowledge about transmission and less knowledge about symptoms and treatment which was contrast to our findings where knowledge about symptoms and treatment was good. Knowledge among participants was not associated with gender, but there was association in education level where as education level increased, the knowledge also increased which was similar to our study.¹⁰

The study in West Bengal by Pramanik et al reported poor knowledge among rural population similar to our study.¹¹ The study in rural setting, Aligarh by Eram et al reported that there were misconceptions and stigma towards tuberculosis patients which was similar to our study where rural people expressed that tuberculosis people should be stigmatized because of transmission.¹²

The Vijayakrishnan et al study reveals that people from Rural Health Training Centre in Tamil Nadu had poor knowledge about its risk factors, mode of spread and treatment which was similar to our study.¹³ Angeline et al study and Bindu et al study also reported inadequate knowledge of Tuberculosis among rural population of Tamil Nadu similar to our study.^{14,15}

Kala et al study conducted at Mamandur, Tamil Nadu also showed significant association of knowledge with educational status which was similar to our study.¹⁶

The study by Pramanik et al reported that main source of knowledge was from health worker which was contrast to this study.¹¹ The source of knowledge is mainly from family and friends by Bindu et al study which was similar to our study.¹⁵ The source of knowledge from urban slums in Surat city by Mahida et al was through mass media which was contrast to this study as main source was from health care personnel.¹⁷ These variations may be due to availability, accessibility and utilizing behavior of health care by the participants.

Limitations of this study was a facility-based study. The Diabetics who were adhered to Health centres were assessed for perception score.

CONCLUSION

The overall perception score was better among urban diabetes patients than in rural diabetes patients. However, the score was only average among urban diabetics. In rural setting, majority of them have not even heard about tuberculosis. It is essential to educate diabetes patients regarding tuberculosis to prevent its complications. Health education measures can be carried out by mass media and in diabetic outpatient department. Information, education, counselling materials can be displayed. Diabetes patients with symptoms of lower respiratory tract infections should be subjected to investigation for Tuberculosis. The screening campaigns and health education activities should be strengthened at diabetic outpatient department.

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